

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Dock t No.

00-830-A

Serial No.

09/887,182

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

U.S. PATENT APPLICATION DOCUMENTS

Examiner Initial		Document Number	Filing Date	Name	Class	Subclass	Publication Date if Appropriate
JY	1.	5,153,319	03/31/86	Caruthers et al	536	27	
	2.	5,132,418	06/18/84	Caruthers et al	536	27	
	3.	4,973,679	09/18/86	Caruthers et al	536	27	
	4.	5,686,599	05/02/95	Tracz	536	25.31	
	5.	5,804,683	05/05/95	Usman et al	435	113	
	6.	5,831,071	08/29/97	Wincott et al	536	25.31	
	7.	5,281,701	07/12/91	Winayak	536	25	
	8.	4,923,901	09/04/87	Koester and Coull	512	53	
	9.	5,723,599	03/22/95	Klem and Riley	536	25.3	
	10.	5,674,856	02/23/95	Kurukawa	514	44	
	11.	5,141,813	08/28/89	Nelson	428	402	
	12.	5,419,966	07/12/93	Reed	428	406	
	13.	4,458,066	03/24/81	Caruthers et al	536	27	
	14.	5,252,723	11/27/90	Bhatt	536	25.3	
	15.	4,987,071	12/03/86	Cech et al	435	91	
	16.	5,849,902	12/15/98	Arrow et al	36	24.5	
JY	17.	5,989,912	12/15/98	Arrow et al	435	375	

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-830-A

Serial No.

09/887,182

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

18.	5,834,186	06/02/95	George et al	435	6	
19.	5,741,679	09/16/94	George et al	435	91.31	
20.	5,589,332	05/09/94	Shih et al	435	6	
21.	5,871,914	06/02/94	Nathan et al	435	6	
22.	5,334,711	06/22/92	Sproat	536	24.5	
23.	5,716,824	04/20/95	Beigelman et al	435	240.1	
24.	5,627,053	05/02/95	Usman et al	435	91.1	
25.	5,672,695	09/23/91	Eckstein et al	536	24.5	
26.	4,306,839	08/23/79	Pien	416	200 R	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
27.	0 325,970	14.01.89	Europe					
28.	2,169,605 A	16.12.85	Japan (Yano et al)					
29.	94/01446	29.06.93	WO/PCT (Reddy et al)					
30.	280,968	10.07.83	Germany (Samuel P. Smith)					
31.	97/42202	04.10.96	WO/PCT (Zhang et al.)					
32.	92/07065	23.09.91	WO/PCT (Eckstein et al.)					
33.	93/15187	28.01.93	WO/PCT (Usman et al.)					

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(R v. 2-32)U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-830-A

Serial No.

09/887,182

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

34.	97/26270	23.12.96	WO/PCT (Wincott et al.)				
35.	00/24931	22.10.99	WO/PCT (Nathan et al.)				
36.	00/26226	29.10.99	WO/PCT (Breaker et al.)				
37.	98/27104	18.12.97	WO/PCT (Breaker et al.)				
38.	99/29842	03.12.98	WO/PCT (Sullenger et al.)				
39.	98/13526	26.09.97	WO/PCT (Arrow et al.)				
40.	99/54459	19.04.99	WO/PCT (Thompson et al.)				
41.	93/23569	29.04.93	WO/PCT (Draper et al.)				
42.	93/23057	13.05.93	WO/PCT (Thompson et al.)				
43.	94/02595	02.07.93	WO/PCT (Sullivan et al.)				
44.	95/04818	04.08.94	WO/PCT (Draper et al.)				
45.	95/23225	23.02.95	WO/PCT (Stinchcomb et al.)				
46.	95/13380	10.11.94	WO/PCT (Draper et al.)				
47.	91/03162	05.06.90	WO/PCT (Ross et al.)				
48.	98/28317	19.12.97	WO/PCT (Karpeisky et al.)				

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

49.	Usman and Cedergren, <i>Trends in Biochem. Sci.</i> 1992, 17, 334-339.
50.	Sproat et al., "An Efficient Method for the Isolation and Purification of Oligoribonucleotides," <i>Nucleosides &amp; Nucleotides</i> 14:255-273 (1995).
51.	Gait et al., "Ch. 2 - Oligoribonucleotide synthesis," in <i>Oligonucleotides and Analogues: A Practical Approach</i> , edited by Eckstein, IRL Press, Oxford, pp. 25-48 (1991)

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-830-A

Serial No.

09/887,182

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

52.	Weetall et al., 1974, <i>Methods in Enzymology</i> , 34, 59-72.
53.	Van Aerschot et al., 1988, <i>Nucleosides and Nucleotides</i> , 7, 75-90.
54.	Maskos and Southern, 1992, <i>Nucleic Acids Research</i> , 20, 1679-1684.
55.	Van Ness et al., 1991, <i>Nucleic Acids Research</i> , 19, 3345-3350.
56.	Katzhendler et al., "The Effect of Spacer, Linkage and Solid Support on the Synthesis of Oligonucleotides," <i>Tetrahedron</i> 45:2777-2792 (1989)
57.	Hovinen et al., "Novel Solid Supports for the Preparation of 3'-Derivatized Oligonucleotides: Introduction of 3'-Alkylphosphate Tether Groups Bearing Amino, Carboxy, Carboxamido, and Mercapto Functionalities," <i>Tetrahedron</i> 50:7203-7218 (1994)
58.	Kitamura et al., 2000, <i>Chem Lett.</i> , 10, 1134-1135.
59.	Katzhendler et al., "Spacer Effect of the Synthesis of Oligodeoxynucleotides by the Phosphite Method," <i>Reactive Polymers</i> 6:175-187 (1987)
60.	Katzhendler et al, 1989, <i>Tetrahedron</i> 45, 2777.
61.	Pon et al., "Derivatization of Controlled Pore Glass Beads for Solid Phase Oligonucleotide Synthesis," <i>BioTechniques</i> 6:768-775 (1988)
62.	Greenberg, ., "Photochemical Release of Protected Oligonucleotides Containing 3'-Glycolate Termini," <i>Tetrahedron</i> 51:29-38 (1995)
63.	Palom et al., 1991, <i>Tetrahedron Lett</i> 34, 2195-2198.
64.	Pon & Yu, 1997, <i>Tetrahedron Lett</i> 38, 3327-3330.
65.	Dell-Aquila et al., 1997, <i>Tetrahedron Lett.</i> 38, 5289-5292.
66.	Birch-Hirschfeld et al., "A versatile support for the synthesis of oligonucleotides of extended length and scale," <i>Nucleic Acids Research</i> 22:1760-1761 (1994).
67.	Alul et al., 1991, <i>Nucleic Acids Research</i> 19, 1527-1532.
68.	Pon, 1993, "Ch. 19 - Solid-Phase Supports for Oligonucleotide Synthesis," in <i>Methods in Molecular Biology, Volume 20: Protocols for Oligonucleotides and Analogs</i> , edited by Agrawal, Humana Press, Inc., Totowa, NJ, pp. 465-497 (1993).
69.	Pon et al., 1999, <i>Nucleic Acids Research</i> , 27, 1531-1538.

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

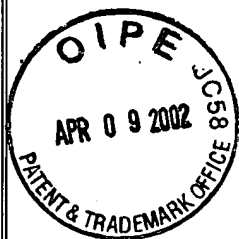
00-830-A

Serial No.

09/887,182

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

70.	Limbach et al., "Summary: the modified nucleosides of RNA," <i>Nucleic Acids Research</i> 22(12):2183-2196 (1994)
	71. Burgin et al., "Chemically Modified Hammerhead Ribozymes with Improved Catalytic Rates," <i>Biochemistry</i> 35:14090-14097 (1996) (volume no mistakenly listed as 6)
	72. Werner and Uhlenbeck, "The effect of base mismatches in the substrate recognition helices of hammerhead ribozymes on binding and catalysis," <i>Nucleic Acids Research</i> 23:2092-2096 (1995)
	73. Hammann et al., "Length Variation of Helix III in a Hammerhead Ribozyme and Its Influence on Cleavage Activity," <i>Antisense &amp; Nucleic Acid Drug Development</i> 9:25-31 (1999)
	74. Cech et al., 1988, 260 JAMA 3030.
	75. Egholm et al., 1993 <i>Nature</i> 365, 566.
	76. Stein and Chen, 1993 <i>Science</i> 261, 1004.
	77. Schmajuk et al., 1999, <i>J. Biol. Chem.</i> , 274, 21783-21789,
78.	Delihias et al., 1997, <i>Nature</i> , 15, 751-753.
	79. Stein et al., 1997, <i>Antisense N. A. Drug Dev.</i> , 7, 151.
	80. Crooke, 2000, <i>Methods Enzymol.</i> , 313, 3-45.
	81. Crooke, 1998, <i>Biotech. Genet. Eng. Rev.</i> , 15, 121-157.
	82. Crooke, 1997, <i>Ad. Pharmacol.</i> , 40, 1-49.
	83. Bass, 2001, <i>Nature</i> , 411, 428-429.
	84. Elbashir et al., 2001, <i>Nature</i> , 411, 494-498.
	85. Torrence et al., 1993 <i>Proc. Natl. Acad. Sci. USA</i> 90, 1300.
86.	Silverman et al., 1999, <i>Methods Enzymol.</i> , 313, 522-533.
	87. Player and Torrence, 1998, <i>Pharmacol. Ther.</i> , 78, 55-113.
	88. Duval-Valentin et al., 1992 <i>Proc. Natl. Acad. Sci. USA</i> 89, 504.

EXAMINER

*[Signature]*

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-830-A

Serial No.

09/887,182



INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

89.	Fox, 2000, <i>Curr. Med. Chem.</i> , 7, 17-37.
90.	Praseuth et al., 2000, <i>Biochim. Biophys. Acta</i> , 1489, 181-206.
91.	Sullenger et al., 1990, <i>Cell</i> , 63, 601-608.
92.	Gold et al., 1995, <i>Annu. Rev. Biochem.</i> , 64, 763.
93.	Brody and Gold, 2000, <i>J. Biotechnol.</i> , 74, 5.
94.	Sun, 2000, <i>Curr. Opin. Mol. Ther.</i> , 2, 100.
95.	Kusser, 2000, <i>J. Biotechnol.</i> , 74, 27.
96.	Hermann and Patel, 2000, <i>Science</i> , 287, 820.
97.	Jayasena, 1999, <i>Clinical Chemistry</i> , 45, 1628.
98.	Scaringe et al., <i>Nucleic Acids Res.</i> 1990, 18, 5433-5441.
99.	Usman et al., 1987, <i>J. Am. Chem. Soc.</i> , 109, 7845.
100.	Scaringe et al., 1990, <i>Nucleic Acids Res.</i> , 18, 5433.
101.	Wincott et al., 1995, <i>Nucleic Acids Res.</i> 23, 2677-2684 Wincott et al., 1997, <i>Methods Mol. Bio.</i> , 74, 59
102.	Christoffersen, <i>Nature Biotech.</i> 1997, 2, 483-484.
103.	Orgel, 1979, <i>Proc. R. Soc. London, B</i> 205, 435.
104.	Joyce, 1989, <i>Gene</i> , 82, 83-87.
105.	Beaudry et al., 1992, <i>Science</i> 257, 635-641.
106.	Joyce, 1992, <i>Scientific American</i> 267, 90-97.
107.	Breaker et al., 1994, <i>TIBTECH</i> 12, 268.
108.	Bartel et al., 1993 <i>Science</i> 261:1411-1418.

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

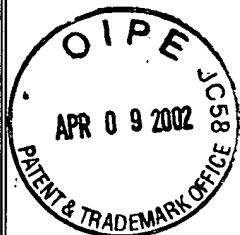
U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-830-A

Serial No.

09/887,182



INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

109	Szostak, 1993, TIBS 17, 89-93.
110	Kumar et al., 1995, FASEB J., 9, 1183.
111	Breaker, 1996, <i>Curr. Op. Biotech.</i> , 7, 442.
112	Santoro et al., 1997, <i>Proc. Natl. Acad. Sci.</i> , 94, 4262.
113	Tang et al., 1997, <i>RNA</i> 3, 914.
114	<del>Nakamaye Y Eckstein, 1994, <i>supra</i>. — incomplete citation</del>
115	<del>Long &amp; Uhlenbeck, 1994, <i>supra</i>. — incomplete citation</del>
116	<del>Ishizaka et al., 1996, <i>supra</i>. — incomplete citation</del>
117	Vaish et al., 1997, <i>Biochemistry</i> 36, 6495.
118	Zaug et al., 324, <i>Nature</i> 429 1986.
119	Uhlenbeck, 1987 <i>Nature</i> 328, 596.
120	Kim et al., 84 <i>Proc. Natl. Acad. Sci. USA</i> 8788, 1987.
121	Dreyfus, 1988, <i>Einstein Quart. J. Bio. Med.</i> , 6, 92.
122	Haseloff and Gerlach, 334 <i>Nature</i> 585, 1988.
123	Jefferies et al., 17 <i>Nucleic Acids Research</i> 1371, 1989.
124	Usman & McSwiggen, 1995 <i>Ann. Rep. Med. Chem.</i> 30, 285-294.
125	Christoffersen and Marr, 1995 <i>J. Med. Chem.</i> 38, 2023-2037.
126	Warashina et al., 1999, <i>Chemistry and Biology</i> , 6, 237-250.
127	Woo-Pong, Nov. 1994, <i>BioPharm</i> , 20-33.
128	Mukhopadhyay & Roth, 1996, <i>Crit. Rev. in Oncogenesis</i> 7, 151-190.

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Dock t No.

00-830-A

Serial No.

09/887,182

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Vargeese et al.

Filing Date:

June 22, 2001

Group:

1623

	129	Mitra et al., 1996, <i>Proc Nat Acad Sci USA</i> 93, 6780-6785.
	130	Perrault et al., 1990 <i>Nature</i> 344, 565.
	131	Picken et al., 1991, <i>Science</i> 253, 314.
	132	Usman and Cedergren, 1992, <i>Trends in Biochem. Sci.</i> 17, 334-339.
	133	Beigelman et al., 1995, <i>J. Biol. Chem.</i> , 270, 25702.
	134	Karpeisky et al., 1998, <i>Tetrahedron Lett.</i> , 39, 1131.
	135	Earnshaw and Gait, 1998, <i>Biopolymers (Nucleic acid Sciences)</i> , 48, 39-55.
	136	Verma and Eckstein, 1998, <i>Annu. Rev. Biochem.</i> , 67, 99-134.
	137	Burlina et al., 1997, <i>Bioorg. Med. Chem.</i> , 5, 1999-2010.
	138	Caruthers et al., "Chemical Synthesis of Deoxyoligonucleotides and Deoxyoligonucleotide Analogs," <i>Methods in Enzymology</i> 211:3-19 (1992)
	139	Beaucage and Iyer, 1993, <i>Tetrahedron</i> 49, 1925.
	140	Hunziker and Leumann, 1995, <i>Nucleic Acid Analogues: Synthesis and Properties, in Modern Synthetic Methods</i> , VCH, 331-417, and Mesmaeker et al., 1994, <i>Novel Backbone Replacements for Oligonucleotides, in Carbohydrate Modifications in Antisense Research</i> , ACS, 24-39.
	141	Nathans et al., 1975 <i>Ann. Rev. Biochem.</i> 44: 273.

EXAMINER

DATE CONSIDERED

13 JUNE 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.